



US009636725B2

(12) **United States Patent**
Zanella et al.

(10) **Patent No.:** **US 9,636,725 B2**

(45) **Date of Patent:** **May 2, 2017**

(54) **ROLLING PLANT, ROLLING MILL AND ROLLING METHOD**

(71) Applicant: **SMS INNSE S.P.A.**, San Donato Milanese (IT)

(72) Inventors: **Guido Emilio Zanella**, Milan (IT); **Vincenzo Palma**, Sesto San Giovanni (IT); **Marco Ghisolfi**, Muggiò (IT)

(73) Assignee: **SMS INNSE S.P.A.**, San Donato Milanese (IT)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 15 days.

(21) Appl. No.: **14/427,616**

(22) PCT Filed: **Aug. 28, 2013**

(86) PCT No.: **PCT/IB2013/058076**

§ 371 (c)(1),

(2) Date: **Mar. 11, 2015**

(87) PCT Pub. No.: **WO2014/045140**

PCT Pub. Date: **Mar. 27, 2014**

(65) **Prior Publication Data**

US 2015/0246381 A1 Sep. 3, 2015

(30) **Foreign Application Priority Data**

Sep. 19, 2012 (IT) MI2012A1559

(51) **Int. Cl.**

B21B 19/04 (2006.01)

B21B 17/04 (2006.01)

B21B 37/16 (2006.01)

(52) **U.S. Cl.**

CPC **B21B 19/04** (2013.01); **B21B 17/04** (2013.01); **B21B 37/16** (2013.01)

(58) **Field of Classification Search**

CPC B21B 19/04; B21B 37/16; B21B 17/04

(Continued)

(56) **References Cited**

FOREIGN PATENT DOCUMENTS

EP 001779939 A1 * 5/2007

EP 1779939 A1 5/2007

(Continued)

OTHER PUBLICATIONS

International Search Report for Application No. PCT/IB2013/058076, mailed May 28, 2014.

Primary Examiner — David B Jones

(74) *Attorney, Agent, or Firm* — Perkins Coie LLP; Viola T. Kung; Andrew T. Pettit

(57) **ABSTRACT**

The invention relates to a pipe rolling plant **10** comprising a rotary piercer **20**, a treatment station **30** and a main rolling mill **40**. The rotary piercer and the treatment station are arranged so that the pierced blank **51** leaving them is arranged with the irregular tail **511** facing the main rolling mill **40** and with the regular head **510** facing the mandrel **41**. The invention also relates to a rolling mill **40** comprising a plurality of rolling stations **43**, each station comprising a plurality of rolling rolls **42**, the radial position *h* of which is adjustable. The rolling mill also comprises a control circuit for calculating and/or measuring the distance *d* between the axes of rotation *r* of the rolls and the trailing edge **520** of the pipe **52**. The control circuit is also designed to displace the rolling rolls radially towards the outside of the pipe in each rolling station **43_n** when the distance *d* assumes a predetermined value *d*₀.

4 Claims, 5 Drawing Sheets

